Volunteer Lake Assessment Program Individual Lake Reports
ISLAND POND, DERRY, NH

MORPHOMETRIC DATA

						TROPHIC CLASSIFICATION		KNOWN EXOTIC SPECIES
Watershed Area (Ac.):	10,880	Max. Depth (m):	24.3	Flushing Rate (yr¹)	1.8	**Year**	**Trophic class**	Fanwort
Surface Area (Ac.):	498	Mean Depth (m):	5.4	P Retention Coef:	0.55	1985	MESOTROPHIC	
Shore Length (m):	14,600	Volume (m³):	11,558,000	Elevation (ft):	205	2002	EUTROPHIC	

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

ISLAND POND - SANBORN SHORE ACRES	E. coli	Cautionary	One exceedance of single sample criteria but not enough data to calcuate geometric mean. More data needed.
ISLAND POND - CHASE'S GROVE	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.
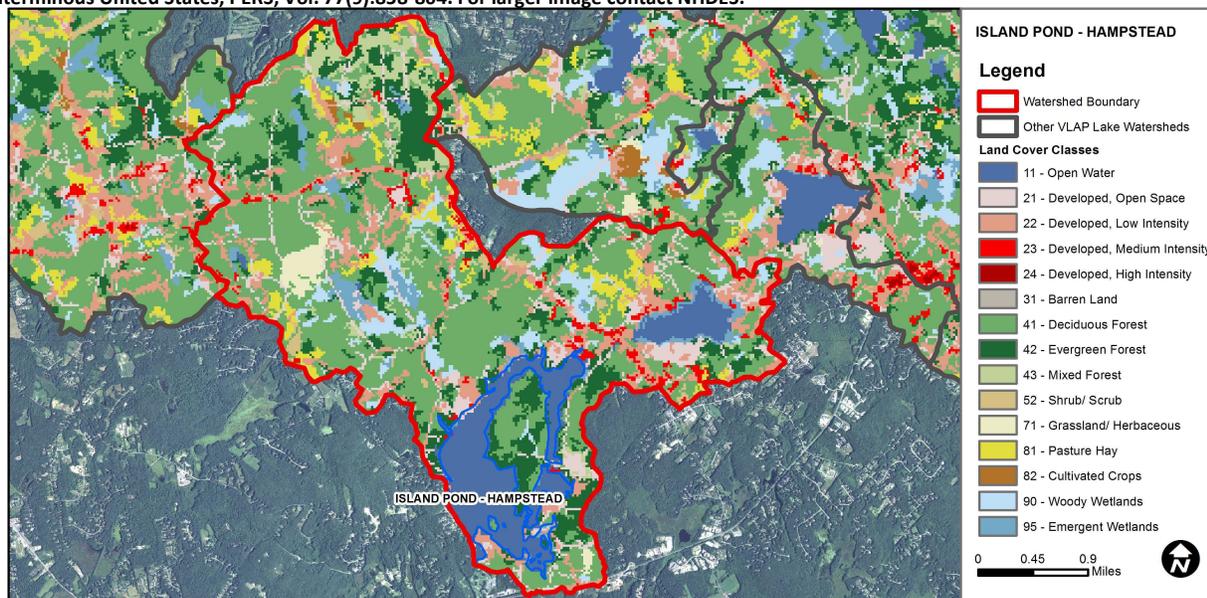
| Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	10.8	Barren Land	0	Grassland/Herbaceous	1.33
Developed-Open Space	7.27	Deciduous Forest	38.67	Pasture Hay	3.98
Developed-Low Intensity	10.4	Evergreen Forest	12.87	Cultivated Crops	0.25
Developed-Medium Intensity	2.02	Mixed Forest	3.73	Woody Wetlands	4.52
Developed-High Intensity	0	Shrub-Scrub	1	Emergent Wetlands	3.08

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic*)

- **CHLOROPHYLL-A:** Average chlorophyll levels have decreased in recent years (2010-2012) which is a positive sign. The 2012 average chlorophyll level was slightly less than the NH lake median. Historical trend analysis indicates chlorophyll levels fluctuate from year to year.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were elevated and much greater than the NH Lake median.
- **E. COLI:** Tributary E. coli levels were elevated in August following a significant rain event.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were below average in 2012. Historical trend analysis indicates epilimnetic (upper water layer) phosphorus levels tend to fluctuate from year to year. Phosphorus in Campground Inlet was elevated in August. Phosphorus levels in Johnson and Perch Cove were also elevated.
- **TRANSPARENCY:** Transparency improved in 2012; however historical trend analysis indicates a significantly decreasing (worsening) lake transparency since monitoring began.
- **TURBIDITY:** Turbidity was relatively low in the tributaries; however hypolimnetic (lower water layer) turbidity was slightly elevated throughout the summer.
- **PH:** pH levels were sufficient to support aquatic life in 2012, however tend to decrease to critical levels in the metalimnion (middle water layer) and hypolimnion.
- **RECOMMENDED ACTIONS:** Continue discussions with local Towns in regards to low salt zones around the lake. Implement an education and outreach campaign for watershed residents to "Scoop the Poop" and clean up after their pets. Pet waste can wash into tributaries during rain events causing elevated bacteria levels. Phosphorus sampling in Johnson and Perch Coves revealed elevated phosphorus levels that may contribute to cyanobacteria or algal blooms in these areas. 2012 was a relatively dry summer with decreased stormwater runoff which resulted in lower lake phosphorus and chlorophyll levels and an increased lake transparency. This indicates the need for implementation of stormwater management activities in the watershed. Refer to the "NH Homeowner's Guide to Stormwater Management" to educate residents on reducing stormwater runoff from their properties.

Dissolved Oxygen & Temperature Profile

Big Island Pond, Deep Spot, August 20
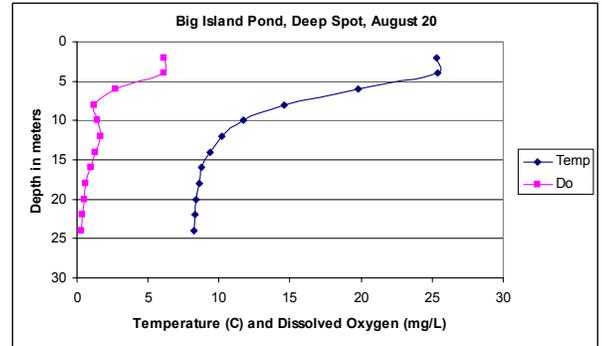
Big Island Pond Phytoplankton Popluation
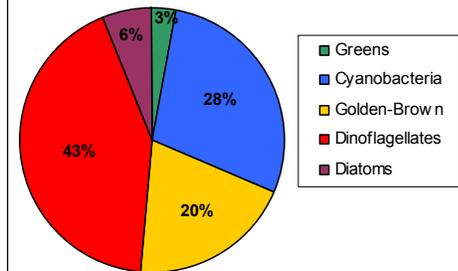
Table 1. 2012 Avearge Water Quality Data for BIG ISLAND POND									
	Alk.	Chlor-a	Chloride	Cond.	E. Coli	Total P	Trans.		Turb.	pH
Station Name	mg/l	ug/l	mg/l	uS/cm	#/100ml	ug/l	m		ntu	
							NVS	VS		
Campground Inlet			38	198.9	100	29			1.46	7.08
Drew Inlet			30	167.1	153	21			1.37	6.69
Deep Epilimnion	15.8	4.11	22	170.9		8	4.65	6.57	0.65	7.15
Deep Metalimnion				169.1		9			0.93	6.54
Deep Hypolimnion				168.9		14			4.64	6.44
Johnson Cove						56				
Perch (Camp) Cove						37				
Shop Bk Culvert					10					
Taylor Brook			32	174.3	110	16			1.27	6.92
Taylor Brook Upstream					60					

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate annually but are not increasing or decreasing.
Transparency	Degrading	Data significantly decreasing (worsening).
Phosphorus (epilimnion)	Variable	Data fluctuate annually but are not increasing or decreasing.

Historical Deep Spot
Chlorophyll-a, Epilimnetic Total Phosphorus & Transparency Data

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